



## WORKING TOGETHER

*Given current funding and staffing levels, partnerships have become a necessity in achieving management goals in parks today. These cooperative efforts can fill almost any natural resource management need, including providing funding and staff for fieldwork and acquisition of natural resource information. Partners range from federal and state, to nongovernmental organizations and the academic community. In 1997, many parks found alternative funding for resource management projects through grants offered by companies or environmental organizations. Some of the same sources also provided volunteers for fieldwork, allowing many projects to proceed. Within the National Park Service, several part-time liaisons have been established in recent years at the U.S. Geological Survey and Environmental Protection Agency to improve the coordination of mutually beneficial projects. The most recent of these, with the USGS Biological Resources Division, is working to help improve the knowledge used to protect park resources. On the increase, partnerships continue to help us succeed in our natural resource preservation mission.*

### Public-Private Partnership

## Geologist-in-the-Parks Program: Partnering to meet park needs

by Diann Gese and Judy Geniac

Bob Lorkowski is usually teaching science classes to high school students in California; however, he has spent the last two summers mapping and describing six sandstone units in Hagerman Fossil Beds National Monument (Idaho). Rangers use these research-resource reports in their presentations to park visitors. Bob uses this project as an example to show students “what science is all about” in the real world.

This is just one success story of the Geologic Resources Division’s Geologist-in-the-Parks Program. Created in 1996, this program’s mission is simple: facilitate the temporary placement of geoscience professionals

in the parks. Geoscientists work with park staffs to help them understand and manage geologic resources in the following capacities: interpretation, education, resource management, and research. During 1997, the program placed 36 geologists in parks; six were placed in 1996.

The overwhelming success of this program is the result of forming partnerships and creative advertising of the park’s geologic opportunities. The Geologic Resources Division partners with individual park units, professional societies including the Geological Society of America, American Geological Institute, academia, and other federal agencies.

Parks can request geologic assistance at any time. Each position is advertised on the program’s web site ([www.nps.gov/grd/geojob/geojob.htm](http://www.nps.gov/grd/geojob/geojob.htm)). Last year several parks received up to 25 inquiries for one geologic position. These geologists varied in experience, education, and background. They included retired professionals who wanted to share their geologic expertise

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Geologist Bob Lorkowski investigates geological strata at Hagermann Fossil Beds National Monument (Idaho) as part of the Geologists-in-the-Parks Program. Begun in 1996, the program facilitates the temporary placement of geoscience professionals in parks.

and interests with national park staffs, undergraduate and graduate geology students interested in gaining geology-related work experience with the National Park Service, and working professionals willing to donate their “spare” time.

In 1997, Dave Bennet, a retired earth science teacher, interpreted Sunset Crater Volcano National Monument (Arizona) to the visiting public and guided geology walks to school groups. Tom Lyttle and Donna Smith, geologists at Los Alamos National Laboratory, helped Chaco Culture National Historical Park (New Mexico) examine paleontological sites and extract specimens. Sarah Schlichtholz, a recent geology graduate, created a paleontological database for Denali National Park (Alaska). A complete list of

1997 program accomplishments can be viewed at the web site.

The National Park Service and the public have benefited tremendously from the thousands of hours that participants have given to the parks this past year. A few are seasonal employees, but most are students or retired professionals who volunteer their time. The Geologic Resources Division funded the program with a \$10,000 grant that was used entirely for stipends and analytical costs. The Geological Society of America provided scholarships (\$2,500 each) for two interns. As this program enters its third year, the Geologic Resources Division plans to expand the program to continue working with parks to help them understand and manage their geologic resources.

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#### Governmental Partnerships

## Taking the pulse of ecosystems with DISPro

by Kathy Tonnessen

Where did you last vacation: at the beach, forest, lakeshore, or mountaintop in one of our national parks? If so, then like most adults in the United States, you got most of your annual exposure to ultraviolet (UV) radiation while outdoors during that too-short respite. Ozone thinning in the stratosphere is likely increasing the exposure of both humans and natural ecosystems to this damaging radiation each year. But up until now, scientists have not measured this “external stress” that can

trigger human cancers and cataracts, and can change the mix of insects and algae.

In 1997, the National Park Service and the Environmental Protection Agency joined forces to fill this gap in knowledge about atmospheric pollution and its effects on park ecosystems. Together we embarked on DISPro (Demonstration Intensive Site Project)—a long-term program of monitoring and research at “index” park sites throughout the country. The DISPro parks represent a range of systems from the arctic to the tropics: Acadia, Big Bend, Canyonlands, Denali, Everglades, Glacier, Hawaii Volcanoes, Olympic, Rocky Mountain, Sequoia, Shenandoah, Theodore Roosevelt, and Virgin Islands National Parks. In selecting these sites, we worked to complement the array of prototype parks included in the national NPS Inventory and Monitoring Program.

In 1997, both agencies forged ahead in constructing this network of parks. More than half of the DISPro parks have functioning UV monitors, making this the largest network of its kind in the world. The National Park Service contributed to the joint effort by maintaining and adding to its existing air monitoring network. Most parks are now successfully collecting data on pollutants in rain, snow, gases (such as sulfur and nitrogen), and particles, as well as on visibility, ozone

Ultraviolet radiation monitors, such as this one at Glacier National Park (Montana), are adding to our knowledge about atmospheric pollution and its effects on park ecosystems. Under DISPro, a network of parks is now collecting data on pollutants in rain, snow, gases, and particles, as well as on visibility, ozone and meteorology.



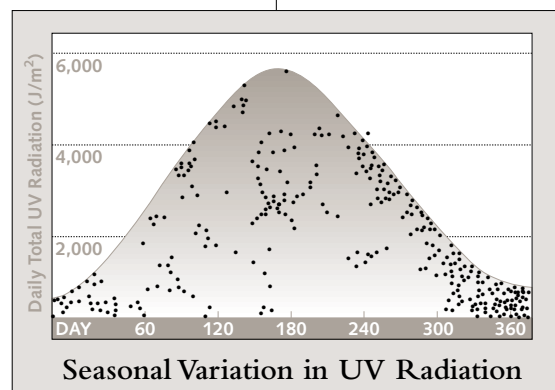
Glacier National Park

(the “bad” type found in the lower atmosphere), and meteorology. This stressor monitoring is critical in being able to chart the success of air quality regulations, and to allow researchers to link the stress (air pollution, UV) to ecosystem responses.

To identify and monitor indicators of ecosystem health, the Park Service and EPA issued a call for research proposals during the summer, with awards of about \$2 million in research projects expected in early 1998. This research program meets the highest standards of peer review and relevance to park and EPA needs. During this first round, the partnership will fund projects to investigate ecosystem effects of tropospheric ozone, nitrogen deposition, and excess UV radiation. The year closed with a meeting of DISPro team mem-

bers (the National Park Service, EPA, and U.S. Geological Survey) at Estes Park, Colorado, a short jog from Rocky Mountain National Park.

There, program staff reviewed the network operations, planned for future ecosystem and indicator research, and highlighted the resource management issues at the DISPro parks. And we also celebrated the beginning of a long, productive association among regulatory, research, and resource management agencies to protect ecosystem and human health.



This graph shows seasonal variations in UV radiation at Great Smoky Mountains National Park (Tennessee and North Carolina) for 1997. To be collected in the 14 DISPro parks, data like these will add to international data sets aimed at assessing the status of stratospheric ozone.

## The NPS-BRD partnership

by Denny Fenn and Mike Soukup

One year after merging with the U.S. Geological Survey, the Biological Resources Division (BRD—formerly National Biological Service) is more stable. This stability has provided the opportunity to foster the continued growth of our working relationship and to keep our partnership on track and focused on the future. As always, strong communication between our two decentralized bureaus is imperative.

During 1997, several joint activities helped facilitate this communication. Together we participated in both the George Wright and Wildlife Society meetings. There, NPS resource managers and BRD research scientists explored ways to nurture on-the-ground partnerships. We also participated in each other's business meetings, thus facilitating NPS resource managers discussing with BRD science center managers the biological information needs in parks. These discussions helped the exploration of new ways in which those needs could be met by the research centers. Additionally, funding increases for BRD in fiscal year 1998 will facilitate the opportunity for more joint activities and bode well for the future of the partnership.

Three years have passed since we agreed to jointly fund the operating costs of former NPS researchers who now work for the Biological Resources Division. As a way to assess the effectiveness of this cooperative relationship, the Biological Resources Division will prepare progress reports of its research in parks during the coming year. Also, BRD began to permanently fund the recurring operating costs faced by many of these researchers this fiscal year. The Park Service will continue to contribute project funding, and together we will develop a new process for selecting the next round of jointly funded projects.

A jointly authored white paper prepared during the past year observed that the Park Service depends on research, technical assistance, and operational support for the proper management of park natural resources and that the Biological Resources Division provides only research and technical assistance to its partners. This observation has helped our organizations prepare operating procedures, to be issued during 1998, that best address park needs, including identifying tactical research requirements that will focus on those activities most needed by park managers. Additionally, these procedures will work to ensure that researchers and the methods they use in conducting this research will be those most suitable for individual park contexts.

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Funded by Canon U.S.A., Inc., through the National Park Foundation, Expedition Into The Parks paid for 13 natural resource preservation projects in parks during 1997 with over one million dollars in cash and equipment donated. These important projects could not have been started without these generous grants, now in their third year.





More than ten percent of the researchers who transferred from the Park Service to the BRD have moved on since their transfer, giving the BRD an opportunity to shape its research efforts through changes in personnel and task assignments. The National Park Service has also been able to hire several senior scientists who will begin to satisfy park demands for scientific operational assistance, as well as building better liaisons to BRD. Also, in converting its former regional chief scientist positions to regional science advisors, the Park Service has increased the effectiveness of these staff as liaisons with both the BRD and the academic community. BRD and NPS are participating in initiation of up to four new Cooperative Ecosystem Studies Units to both increase direct contact with each other and increase university focus on land management issues. Other agencies have shown interest in this cooperative, regional scale approach

to providing scientific support and have pledged to commit staff and resources to this cooperative effort.

The first year of the NPS-BRD partnership held significant gains, but challenges remain. We need to address the request for increased coordination of common research activities across BRD regional boundaries. We need to respond to the desire for faster production of park vegetation maps and for continued technical assistance from the Biological Resources Division to park prototype monitoring programs. We need to stimulate parks to ask for technical assistance when they need it. We need to increase the professional standing of NPS staff and simplify park research procedures to improve BRD-NPS collaboration and to attract more BRD projects to parks. By addressing these needs, we can make our partnership even more effective in 1998 than we found it at the close of 1997.

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#### Cooperative Funding

## Canon National Parks Science Scholars Program

by Cindy Daly

Secretary of the Interior Bruce Babbitt (third from left) and Canon U.S.A. CEO Haruo Murase (third from right) presented the Canon Scholars awards to (left to right) Tom Meixner (University of Arizona), Dave Smyth (Michigan State University), Andrew Suarez (University of California—San Diego), and Ilene Grossman-Bailey (Temple University) during an August ceremony. The scholarship winners plan original research projects that range from the New Jersey Coastal Heritage Trail to Cabrillo National Monument (California).

In 1997, the Canon National Parks Science Scholars Program was established to help develop the next generation of scientists working in the fields of conservation, environmental science, and park management. The program's goal is to encourage the best and brightest graduate students in all relevant scientific disciplines to conduct important research in the national parks.

The program is underwritten by Canon U.S.A., Inc. Canon's \$2.5 million commitment will enable 32 doctoral students (four in 1997-98 and eight per year beginning in 1999) to conduct research within the national park system over the next five years. Canon will also support honorable mention awards and fund an annual science scholars symposium. The annual symposium will provide a national forum for scientists to explore the role of science in preserving the national parks.

Other collaborating organizations include the National Park Service, the National Park Foundation (NPF), and the American Association for the Advancement of Science (AAAS). The Natural Resource Stewardship and Science Directorate is responsible for managing the program, coordinating various activities, and monitoring student progress. The Associate Director, drawing on suggestions from park managers in the field, selects research topics in four areas: the biological, physical, social, and cultural sciences. The AAAS assembles scientific review panels to evaluate submitted proposals and select the award winners. The National Park Foundation transfers scholarship funds provided by Canon to each student's university, providing



National Park Service

for tuition, fieldwork, a stipend, and other expenses. Each winning student is awarded \$25,000 per year for a maximum of three years. The students will complete their dissertation, prepare an article for park managers on the significance of their research, and present a public lecture about their work.

The 1997 science scholars will be conducting their research in Cabrillo National Monument (California), Sequoia-Kings Canyon National Parks (California), and Rocky Mountain National Park (Colorado), the New Jersey Coastal Heritage Trail, and other sites. The program sponsors held a recognition dinner at the

AAAS headquarters in Washington, D.C., that was attended by Secretary of the Interior Babbitt, Canon CEO Haruo Murase, NPS Director Bob Stanton, National Park Foundation President Jim Maddy, AAAS CEO Richard Nicholson, and the winning students, their faculty advisors, and families.

While young scientists will benefit from these scholarships, America's national parks are the ultimate beneficiaries of this innovative program. The Canon National Parks Science Scholars Program will nurture a new generation of scientists to grapple with the challenges that face the national park system.

## Hagerman's horse fossils saved and studied

by Lissa Fox with Greg McDonald

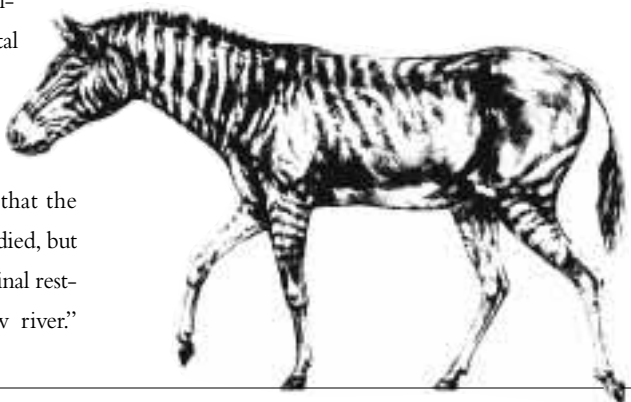
In 1997, Hagerman Fossil Beds National Monument (Idaho) capitalized on a rare opportunity to study and save the park's unique 3.5 million-year-old fossil site. Thanks to a timely grant from Canon U.S.A., Inc., and the National Park Foundation, experts from the National Park Service, the Smithsonian Institution, and other organizations throughout the United States and Canada were able to rescue the fossils in Hagerman Horse Quarry from the threat of landslide and shed new light on how hundreds of dead horses ended up at this site.

"For over 60 years, paleontologists have hypothesized that the horses either died around a water hole or while crossing a fast-moving river during a flood and were immediately buried," says Dr. Greg McDonald, Park Paleontologist. "Studying the sedimentology at the site for the first time added a vital dimension to the picture, telling scientists whether the bones and sediments were deposited in place or were moved from another location. Last summer's work shows that the animals were not lying at the spot where they died, but rather died nearby and were moved into their final resting place by the current of a broad, shallow river."

Besides the numerous horse bones, bones of small animals such as fish, frogs, and rodents were also recovered and provide more insight into the ecology of the river.

Major new technological advances made these new discoveries possible, explains McDonald. Using a laser transit and three-dimensional mapping (GIS), techniques not previously applied to a fossil site, paleontologists precisely mapped the location of bones and sediment types. With this new data, researchers determined that the ancient river system was more like the slow-moving Platte River than the present-day Snake River, which flows 600 feet below the quarry.

The world almost lost the unique fossils at Hagerman Horse Quarry. Threatened by landslides, the world-famous Horse Quarry fossils could have been destroyed at any time. "Excavations of this size are expensive," explains McDonald. "We could not get the funding needed to protect and study these world-class fossils. Without Canon's Expedition Into The Parks, these resources could have been lost forever."



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Hagerman Fossil Beds National Monument, Cliff Dickey

Made possible by a grant from Canon U.S.A., crews excavated the Hagerman Horse during 1997. The number and variety of skeletons and species at the site gave paleontologists a rare opportunity to study an entire Pliocene ecosystem and gather new information about the process of evolution.

The ancestor of all modern horses, zebras, and donkeys, the Hagerman Horse is preserved in abundance at Hagerman Fossil Beds National Monument (Idaho). More than 200 complete skeletons of both sexes and all ages of the animal, in addition to skeletons of numerous other species, are contained in the strata of the renowned Hagerman Horse Quarry.

## Partnerships key in securing habitat restoration grants

by Pam Benjamin

The Karner blue butterfly occupies just one percent of its historic range. Habitat restorations, such as an ongoing project at Indiana Dunes National Lakeshore (Indiana) are important for its recovery. During 1997, the park received a grant for the restoration of habitat for the endangered butterfly; also received was a grant for the restoration of a degraded tallgrass prairie. A key to the park's success in securing these grants was its partnerships with The Nature Conservancy and with local organizations and school groups that were able to provide volunteer field support.

In the fall of 1995, The Nature Conservancy approached the park with a request to identify a joint project that its volunteers could assist with at the national lakeshore. The park had previously identified an approximate 150-acre degraded tallgrass prairie as a priority for restoration. As a result,

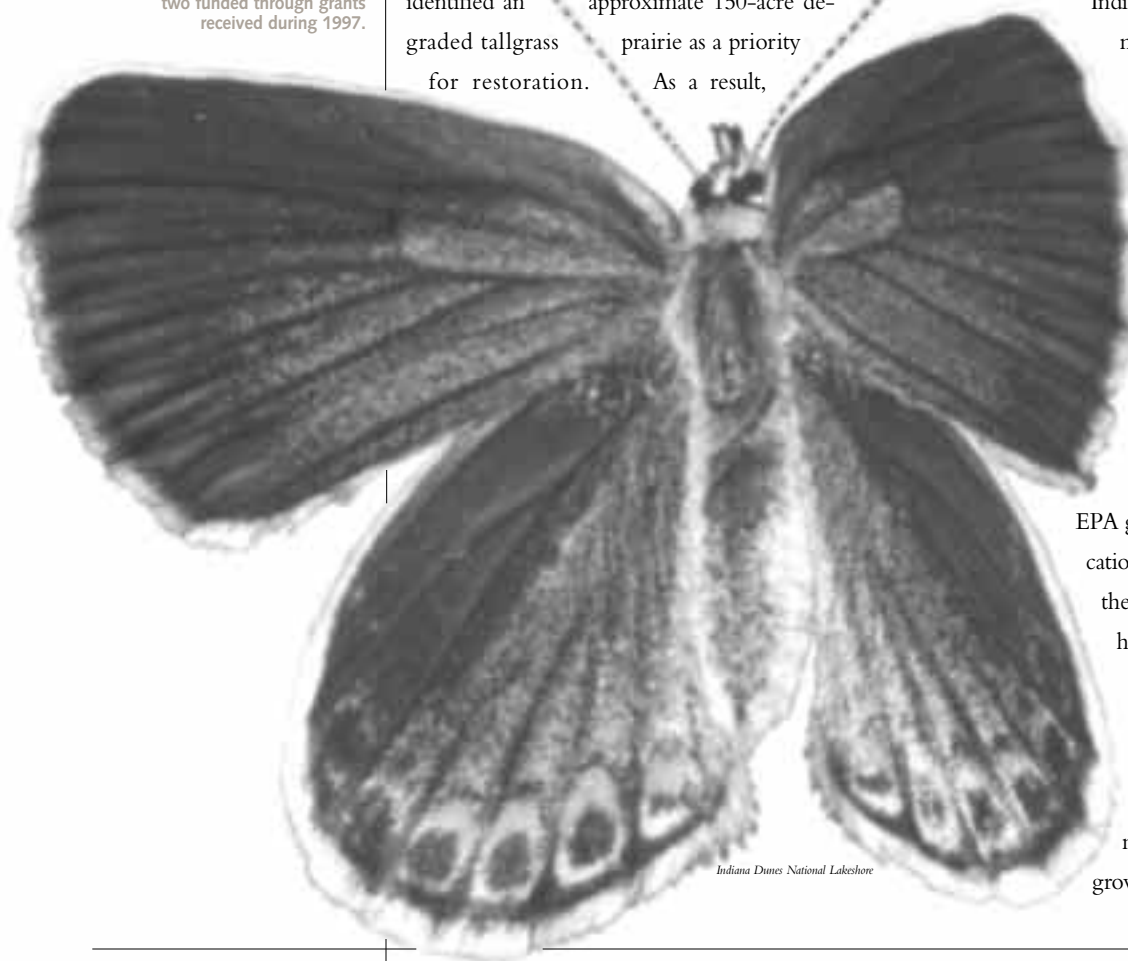
restoration of the Indian Boundary Prairie was initiated in 1996 with financial assistance from The Nature Conservancy and a small grant from the NPS Challenge Cost Share Program. During 1997, the Chicago Wilderness Organization provided an additional small grant to continue the ongoing restoration activities. Although these grants had very specific short-term goals, their overall focus was to develop a dedicated volunteer workforce and to acquire the supplies and equipment needed to sustain it. Volunteers and school groups monitored vegetation, reduced woody species, removed exotic plants, and collected native seeds.

The second grant came from the Great Lakes National Program Office of the U.S. Environmental Protection Agency (EPA) for Karner blue butterfly habitat restoration and corridor establishment. Averaging one inch in size, the Karner blue is a small, yet charismatic, endangered butterfly. Currently, the lakeshore is home to two distinct populations of the species, representing the largest concentration of the butterfly within

Indiana. This two-year grant will assist the national lakeshore in restoring degraded savanna and prairie habitats and in connecting the currently isolated populations of the species within the park. Restoration activities in 1997 included establishment of vegetation monitoring plots, Karner blue butterfly counts, exotic vegetation removal, limited use of prescribed fire, and native seed collection.

An important component of the EPA grant focuses on environmental education. Resource managers, working with the park Division of Interpretation, have developed an on-site program for elementary school children discussing endangered species, habitat loss, and restoration. As part of this program, school groups assisted with native seed collection and will be growing native grass and forb species

Currently isolated from one another, two small populations of the endangered Karner blue butterfly will have an opportunity to interbreed following restoration of a corridor between their habitats at Indiana Dunes National Lakeshore. The restoration project was one of two funded through grants received during 1997.



Indiana Dunes National Lakeshore

over the winter in their classrooms. All supplies for plant propagation were purchased from the grant. A native plant propagation brochure has also been produced to assist teachers and students in growing and caring for their plants. School groups will return in the spring to transplant the seedlings to the restoration site.

Overall, school groups responded in great numbers during 1997, with over 350 students and numerous volunteers participating in restoration projects at the national lakeshore. Although it is too early to judge the actual success of the restoration activities, both grants

have proven successful in providing environmental education opportunities and in assisting in the development of a volunteer workforce essential to the long-term completion of these projects.



Indiana Dunes National Lakeshore, P. Benjamin

As part of the environmental education portion of the EPA restoration grant, school groups collected native seeds at the park. This winter, the students are raising grasses and forbs in the classroom, which they will transplant to the restoration site during spring.

### Workforce Diversity

## Partnership brings Native American employees into Park Service family

by Ron Hiebert

In 1990, the National Park Service entered into a long-term relationship with Haskell Indian Nations College to help the college develop natural resource management curricula and to encourage Native Americans to join the National Park Service. Seven years later, Haskell is developing a four-year degree in natural resources and the Park Service now has two Haskell graduates as employees.

Started in 1884 in Lawrence, Kansas, Haskell has grown from 22 students to over 900 from 130 tribes from 40 states. Begun primarily as a grade school with a focus on agriculture, the university now offers numerous associate degrees and a bachelor of arts degree in teacher education, providing tuition-free higher education to federally recognized tribal members and their descendants. The university wants to become a national center for research, education, and cultural programs that support the educational needs of Native Americans.

In 1988, the university recognized the need for Native American natural resource managers and formed an advisory board to provide advice and assistance on curriculum development and other issues as

needed. The National Park Service is one of eight agencies on the board.

In addition to aiding the university, the National Park Service wishes to add well-trained Native Americans to the Park Service family. Towards this end, the Park Service provides lecturers and instructors, a regular presence at career days, and recruiters on campus. The Park Service also provides summer jobs and internships, and Haskell students can also enroll in the Student Career Employment Program (SCEP), which allows them to go to school and work at the same time. To further help the students, the Park Service provides funding for students enrolled in the SCEP. In 1996, the NPS Associate Director for Natural Resources dedicated \$8,000 per year to support two SCEP enrollees in cooperation with two parks. The Natural Resource Stewardship Directorate also provides \$11,000 per year to fund part of the natural resource instructor and recruiter position on the campus.

In spring 1998, our first SCEP student will graduate with a B.S. in Environmental Studies from Florida International University in Miami. Marnie Loonsberry (Onondaga) has been with Everglades National Park for the last four years. She plans a career with the Park Service and wishes to pursue an advanced degree in wildlife toxicology. Adrienne Ricehill (Potawatamie) will be stationed at Apostle Islands National Lakeshore (Wisconsin) and attending the University of Kansas. The Park Service hopes to place an additional student at Theodore Roosevelt National Park, North Dakota, this summer.

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Park Service involvement in the Chesapeake Bay Initiative is maturing if 1997 is any indication. Emphasis has shifted from individual accomplishments to a strategic sense of how parks can support the overall ecological restoration of the bay. With interpretation a strong point, parks are now educating constituents about the partnership and helping to shape the conservation agenda. The partners are also developing the concept of riparian forest buffers as a preferred means of protecting water resources in the bay's tributary streams and rivers.